

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of

Petition for Rulemaking of the Wireless  
Ethernet Compatibility Alliance To Permit  
Unlicensed National Information Infrastructure  
Devices To Operate in the 5.470-5.725 GHz  
Band

RM-10371

To: The Commission

**REPLY COMMENTS OF THE WIRELESS  
ETHERNET COMPATIBILITY ALLIANCE**

The Wireless Ethernet Compatibility Alliance (“WECA”) hereby replies to the comments on its Petition for Rulemaking (“Petition”). The Petition requests additional spectrum in the 5 GHz band in order to provide sufficient bandwidth to permit the public to fully enjoy today’s emerging resource intensive multimedia applications and to benefit from enhanced educational, medical, business and other services. In addition, allocation of the requested spectrum will allow the globalization of the spectrum and will allow U.S. manufacturers to maintain a leadership role in the world market for these products. Given the significant public interest benefits that will result from the additional spectrum, and due to the ease by which an extension of the unlicensed 5 GHz bands to 5.470-5.725 GHz can be accomplished without harmful interference to other primary users, the Commission should move forward expeditiously to initiate the rule making requested herein.

## **I. THE VAST MAJORITY OF COMMENTS SUBMITTED IN THIS PROCEEDING SUPPORT WECA'S PETITION**

Thirteen of sixteen commenters expressed strong support for WECA's Petition. Most of these commenters have years, even decades, of experience<sup>1</sup> with various wireless transmission technologies and therefore add considerable strength to their own arguments, as well as the arguments put forth by WECA in its Petition. In conjunction with the WECA Petition, these commenters provide a sound policy and technical basis for the FCC to permit the use of the additional spectrum identified by WECA for use by radio local area network ("RLAN") devices.

### **A. The Demand for Wireless Access, as well as the Need for Speed, will Intensify and Dictate that Additional Spectrum be Allocated**

WECA noted in its initial Petition that the HIPERLAN/2 Global Forum ("H2GF") completed a study ("H2GF study") in which it concluded that the need for spectrum in Europe during the next decade will be approximately 540 MHz. Because the circumstances surrounding the H2GF study are analogous to the situation in the United States, the study carries persuasive authority. In fact, Agere Systems ("Agere"), a leading manufacturer of wireless local area network products, stated that "the spectrum requirements for RLAN in the 5 GHz band [in the United States] are likely to exceed the spectrum requirements by the referenced study."<sup>2</sup>

Even if the current rate of wireless transfers were to remain static, which, of course, is not the case,<sup>3</sup> the demand created by the increasing numbers of wireless devices used by the public will put an unsustainable pressure on the current capacity and capabilities of the 5 GHz spectrum. Multiply this pressure with the ever-increasing consumer demand for higher transfer

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<sup>1</sup> Actiontec Electronics, Inc., Agere Systems, Atheros Communications, Inc., Compaq Computer Corp., Intel Corp., Intersil Corp., LinCom Wireless, Inc., Motorola, Inc., Nokia Inc., and Proxim, Inc., as well as the Wireless Communications Association International, Inc., Mr. Denis Kuwahara and Mr. Konrad Roeder, all filed briefs in support of the Petition. These companies and individuals have many years of experience in the wireless industry.

<sup>2</sup> *Agere Systems Comments* at ¶ 2.

<sup>3</sup> *See Proxim, Inc. Comments* at 2.

rates, and it becomes immediately evident that existing 5 GHz unlicensed spectrum is insufficient. On the other hand, provided that 5 GHz unlicensed devices are allowed to utilize additional spectrum, true broadband wireless technology will be able to supplement and enhance the use of current and future broadband wireline services. Atheros Communications, Inc., which produces wireless chipsets and software for wireless high-speed connectivity for both business and residential customers, says that RLAN devices based on its products are capable of transmission rates of over 54 Mbps.<sup>4</sup> Atheros also notes, however, that these transfer rates are not broadly achievable unless the devices are permitted to utilize sufficient spectrum. In fact, as stated by Lincom Wireless, Inc., spectral efficiency will double if the Commission were to grant WECA's Petition.<sup>5</sup> Such an increase in transfer rates and efficient use of spectrum will provide network architects, such as Mr. Kuwahara, the tools necessary to design networks that will better serve their clients, including the public, educational institutions, medical facilities and businesses.<sup>6</sup> It will also allow wireless technology to develop into a technological platform that is able to provide genuine competition to current copper and fiber loops at the "last mile."<sup>7</sup>

**B. Allocation of the Spectrum Identified by WECA Will Harmonize Global Spectrum Usage, Increase Global Competition, and Promote Transparent Mobility**

Commenters uniformly note that if the FCC allocates the spectrum as requested by WECA, manufacturers would be able "to develop a single product type that could operate without modification across a broad global marketplace."<sup>8</sup> This would obviate the need for producing and marketing "region-specific" products, which in turn will create less expensive

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<sup>4</sup> See *Atheros Communications, Inc. Comments* at 2.

<sup>5</sup> Spectral efficiency is measured in number of bits per second per Hertz. See *Lincom Wireless, Inc. Comments* at 2.

<sup>6</sup> See *Mr. Denis Kuwahara Comments* at 1; *Proxim, Inc. Comments* at 1.

<sup>7</sup> See *Motorola, Inc. Comments* at 1-2.

<sup>8</sup> *Intersil Corp. Comments* at 1; see also *Mr. Konrad Roeder Comments* at 1; *Compaq Computer Corp. Comments* at 1, 2; *Actiontec Electronics, Inc. Comments* at 2.

products.<sup>9</sup> As Nokia explains, “[g]lobally harmonized spectrum creates economies of scale that make equipment less costly to manufacture and market, thus reducing costs to the end-user.”<sup>10</sup> An allocation of the spectrum identified by WECA would also allow smaller U.S. manufacturers to produce and sell its products on a global scale because “[b]y creating a larger global market for this equipment, globally harmonized spectrum opens up new markets for previously domestic or regional manufacturers.”<sup>11</sup>

Allocation of additional 5 GHz spectrum would also allow consumers to travel globally using only one device,<sup>12</sup> as there would be no need to reset the wireless device, borders would be transparent to end users, and applications could continue to function seamlessly from country to country. “Globally harmonized spectrum facilitates the provision of similar services on a global basis by allowing the increasing number of users that travel across international borders to use their equipment outside their home countries.”<sup>13</sup>

## **II. THE COMMENTS IN OPPOSITION TO WECA’S PETITION ARE WITHOUT MERIT**

WECA’s Petition has been opposed by three commenters—the American Radio Relay League, Inc. (“ARRL”), Nickolaus Leggett, and the Amherst Alliance and Americans for Radio Diversity (“LPRS Interests”). ARRL opposes the WECA petition stating three reasons:

(i) WECA has not substantiated the need for additional spectrum; (ii) the authorization of RLAN devices will adversely affect Amateur Service operations at 5 GHz; and (iii) the WECA petition prejudices the outcome of WRC03. As discussed below, none of these arguments is valid. Mr. Leggett’s principal opposition to the petition appears to be “frequency conquest” of Amateur

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<sup>9</sup> *Agere Systems Comments* ¶3.

<sup>10</sup> *Id.*; see also *Intel Corp. Comments* at 1.

<sup>11</sup> *Nokia, Inc. Comments* at 1.

<sup>12</sup> See *id.* at ¶3, 6.

<sup>13</sup> *Nokia, Inc. Comments* at 1.

Service bands by Part 15 users and the ability of such users to co-exist with Amateur Services. The LPRS Interests merely echo the comments of Mr. Leggett. Each of their points is addressed below.

First, ARRL notes that WECA has cited a European Telecommunications Standards Institute (“ETSI”) study “allegedly concluding”<sup>14</sup> that 540 MHz of spectrum will be necessary by the year 2010. ARRL’s only counterevidence to the need shown by that study is its statement that comparing HIPERLAN/2 to 5 GHz devices is an “apples and oranges comparison if there ever was one,” without elaboration. In point of fact, HIPERLAN/2 devices *are* 5 GHz devices, and the HIPERLAN/2 and IEEE 802.11a specifications may well merge at some point in the future. In a related theme, ARRL then argues that the proposed expansion of frequencies available for 5 GHz RLAN operation is unnecessary because of recent FCC actions permitting the Part 15 use of spectrum by Ultra-Wideband (“UWB”) and 24 GHz devices. Just as ARRL seeks continued use of different frequency bands for Amateur Services, ARRL must recognize that different propagation characteristics dictate the capabilities of radio systems operating in different bands, and that demand for 5 GHz devices is not at all similar to needs served by either UWB or 24 GHz systems. Thus, none of ARRL’s arguments appear to cast any doubt on the documented need for additional 5 GHz spectrum for RLANs.

Second, ARRL states, in stark contradiction to its first argument, that the proliferation of RLAN devices at 5 GHz will be so dramatic as to result in the exclusion of Amateur Services from the band. Yet, the FCC has previously found—and indeed ARRL has explicitly cited—that “we believe that [RLAN] devices will cause little interference to amateur operations because of the relatively low power with which [RLAN] devices will operate.” Because the interference

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<sup>14</sup> See *ARRL Comments at 5*. ARRL’s “allegation” is unfounded; if ARRL would refer to the study in question, it could verify that, in fact, the study concludes 540 MHz will be required.

profile of the proposed RLAN use is identical to the interference potential of devices operating in the lower U-NII bands, it is simply incorrect to state that “the FCC cannot conclude, on the information before it regarding interference potential, that [RLAN] devices can be authorized on an unlicensed basis.”<sup>15</sup>

ARRL’s interference arguments are also severely undercut by the support for the petition by Konrad Roeder, a ham operator. As noted by Mr. Roeder, there is no “ready made ham equipment or a lot of surplus equipment for hams to use the 5.650-5.725 Ghz band.”<sup>16</sup> He has “only read about a few rare mountain top contacts on these microwave bands,” and states that, “honestly, the Ham Band is a huge amount of spectrum carrying nothing but static.”<sup>17</sup> Indeed, Mr. Roeder also notes that commercial unlicensed use of this spectrum segment may actually benefit hams in that off the shelf equipment would become widely available.

Third, with respect to ARRL’s argument that WECA’s petition “prejudges” the outcome of WRC03, WECA notes that allocations for license-exempt 5 GHz RLAN devices are a matter of record in many nations already. Indeed, ARRL suggests WECA’s measured approach of seeking domestic action in concert with ongoing ITU efforts to secure international harmonization for 5 GHz RLANs is “troubling” and akin to a “bull in a china shop.”<sup>18</sup> What WECA suggests, and has always been suggesting, is that there are significant public interests benefits to providing Americans with enhanced telecommunications capabilities in the form of 5 GHz RLANs, and that international standardization of frequency allocations for RLANs is critical to achieving the benefits of RLAN cost and performance advantages. It would, in fact, be disingenuous and logically inconsistent for the U.S. to advocate internationally in favor of

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<sup>15</sup> *ARRL Comments* at 8.

<sup>16</sup> *Konrad Roeder Comments* at 1.

<sup>17</sup> *Konrad Roeder Comments* at 1.

<sup>18</sup> *ARRL Comments* at 4 n.4.

RLAN harmonization, as WECA believes it should, when the U.S. itself had initiated no efforts to harmonize its own spectrum usage at 5 GHz. In sum, WECA urges the U.S. to expand the benefits of RLANs by supporting ITU efforts at harmonization and, while placing the WECA petition on public notice is a necessary first step, to proceed expeditiously to a Notice of Proposed Rule Making to demonstrate U.S. commitment to this technology and this band.

Mr. Leggett's comments are largely unrelated to the deployment of 5 GHz RLANs,<sup>19</sup> and even his principal concern appears to have more to do with FCC allocation policies in general rather than the 5 GHz bands specifically. He advances the argument that "frequency conquest" by unlicensed devices will occur, whereby the "powers-that-be [will] get rid of the licensed users who have become a public nuisance."<sup>20</sup> While WECA believes—and the FCC has previously found—that 5 GHz RLANs can co-exist harmoniously with Amateur Services, all radio users exist subject to the regulatory power of the government and the FCC's power to reallocate spectrum from one use to another. The fear that spectrum used by Amateur Services in this particular band may be reallocated, however, seems misplaced in that WECA has not proposed to eliminate the existing users. The relative benefits of one spectrum use over another, therefore, should not be a bar to proceeding with the NPRM and should be deferred to a time when—if ever—the FCC entertains a proposal to terminate Amateur Service rights in a band.

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<sup>19</sup> Mr. Leggett's analogy to dark fiber and statement that "such a situation could develop in wireless" is inapt. The market for unlicensed devices shares virtually no commonality with the capital expenditure-intensive deployment of fiber optics, since unlicensed sales are incremental in nature. Moreover, the concept that RLANs at 5 GHz could contribute to driver safety problems is difficult to reconcile with reality. While it is theoretically possible for two nomadic RLAN devices to communicate within a car, the utility of such devices lies in networking computing devices, and use of mobile computers by drivers does not appear to be a safety issue (at a minimum, if use of laptops by drivers becomes an issue, it is difficult to see how the problem could be exacerbated by RLAN usage). Further, while Mr. Leggett avers support of freenets, he indicates that the FCC should address the "theft of [ISP] service" as a prerequisite to a 5 GHz NPRM. Whether a freenet user is "stealing" service by connecting to the internet via a gateway that is intentionally left "open" by an authorized user appears to be a matter of the contract between the ISP and the freenet administrator, and should not require FCC attention, much less preclude a 5 GHz NPRM.

<sup>20</sup> *Nickolaus E. Legget Comments* at 2-3

The opposition of the LPRS Interests is even more puzzling and may stem from a misperception of WECA's goals. WECA is not proposing to displace either hams or low power radio broadcasters. Indeed, WECA's petition explicitly discussed the use of similar, but lower speed, devices for the creation of community-based "freenets" in the 2 GHz band, and noted that similar developments may occur in the 5 GHz band. In short, there is no aspect of the WECA petition that would limit diversity; to the contrary, the availability of low-cost, license-exempt consumer devices could, in fact, stimulate development and extension of data networking capabilities to underserved areas and populations.

In sum, WECA believes the minimal opposition to its petition is either based upon a factual misunderstanding of what WECA seeks to accomplish, speculative reasoning without any foundation, or legal arguments that extend far beyond the scope of the requested rule making. For the foregoing reasons, WECA therefore believes the Commission should expeditiously proceed to a Notice of Proposed Rule Making incorporating the WECA proposals.



### III. CONCLUSION

Both the Commission and WECA and its members have several years of experience with the current U-NII rules and its impact upon wireless broadband devices. It is clear that additional spectrum is needed, and the Commission should therefore move forward to propose rules in response to WECA's Petition. Moreover, the Commission should extend the current rules that govern the operation of devices at 5.25-5.35 GHz to the expanded band at 5.470-5.725 GHz.

Respectfully submitted,

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